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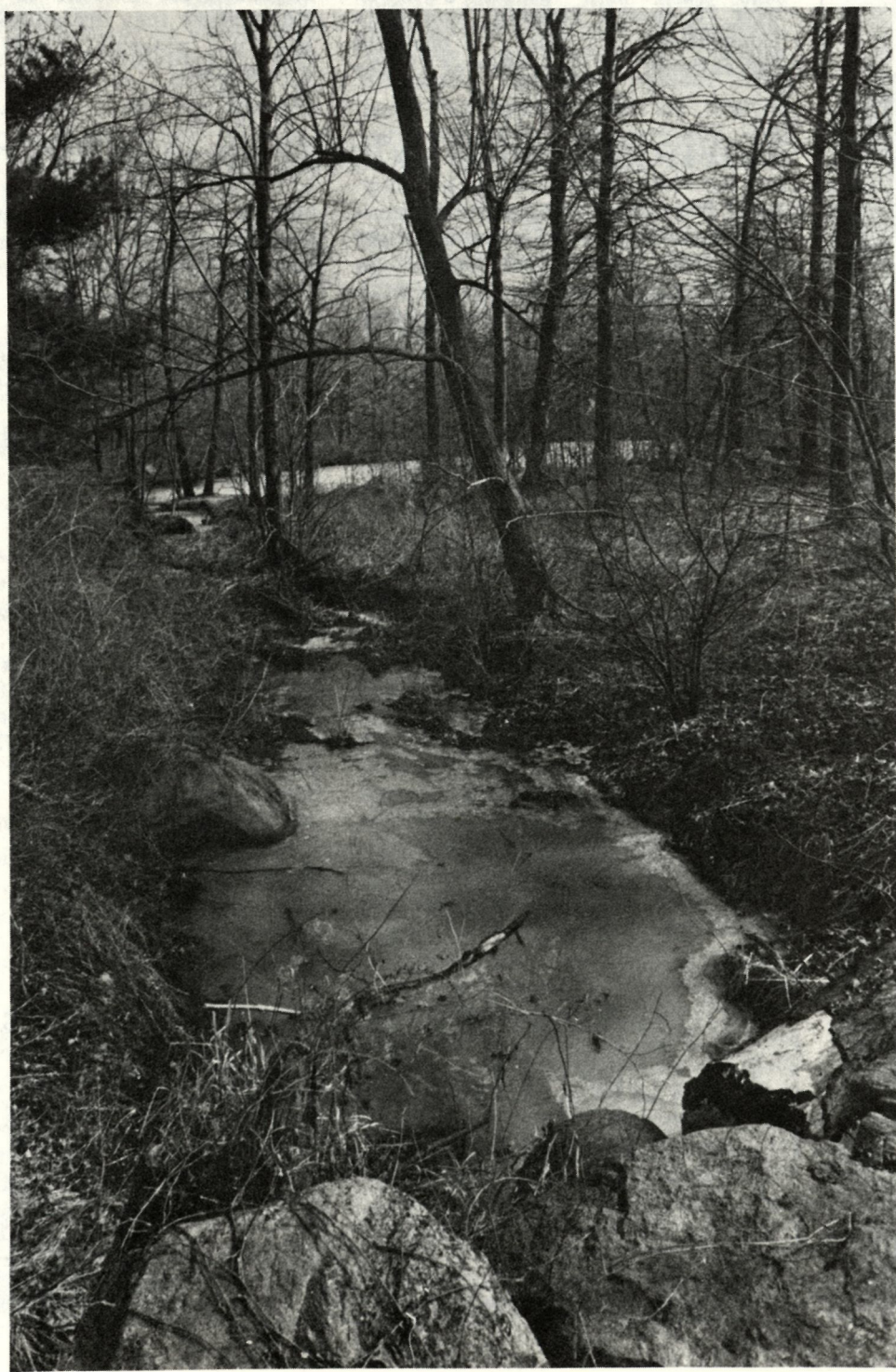
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Citizens' Bulletin

Volume 8 Number 1 September 1980 \$3/yr.
The Connecticut Department of Environmental Protection



Land Trusts

Citizens' Bulletin

Volume 8 Number 1

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Pheasant questionnaire

The DEP Wildlife Unit is conducting a survey directed to the pheasant hunters of our State. A questionnaire is attached to the 1980 hunting license, and sportsmen obtaining licenses in the upcoming months are asked to fill it out completely and drop it in the mail. Responses to this survey will reflect pheasant hunting activities during the 1979 season.

The DEP and its predecessor agencies have been actively involved with a pheasant release program for over 70 years. Pheasant hunting in Connecticut has provided recreational opportunities for

thousands. Over the years, it has become difficult to maintain pheasant distribution at a satisfactory level because of growing interest in the sport and the rising costs of birds. With this in mind, it has become necessary to evaluate the current release program.

The survey will gather information on numbers of pheasant hunters, what areas and how often they hunt, portions of the present season utilized, number of birds harvested, hunting related expenditures, amount of additional expenditure they are willing to spend on a program, and related information.

Environmental education conference

The New England Environmental Education Alliance will hold its 1980 annual conference on November 7, 8, and 9 at the YMCA outdoor education center, Camp Jewel, in Colebrook, Connecticut.

Theme of the conference is "Think globally...act locally." Among the topics to be considered will be: land use, energy, environmental

health, the oceans; learning theory, creativity, values and ethics; delivery systems, environmental education techniques, and evaluation.

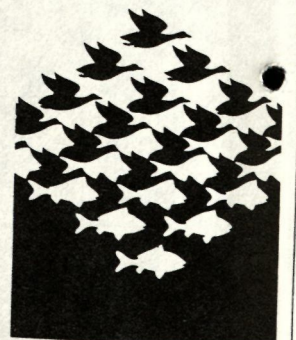
For further information, contact Steven Fish, Program Coordinator, Information and Education Unit, DEP, Hartford, CT 06115; (203) 566-8108.

HELP for environmental studies

The Audubon Center in Greenwich has published HELP: An Educators' Guide to Environmental Studies Resources in Fairfield and Westchester Counties. The 69-page book includes descriptions of 60 nature and environmental centers, public agencies, companies, and individuals offering field trips, in-school programs, resources specialists, and loan materials to teachers in all or part of the Fairfield/Westchester area.

Written by Carol Etzold, Ruth Grand, and Leigh Retzler, HELP is available at the bookstore at the Audubon Center (613 Riversville Road, Greenwich, CT 06830) or by mail. Copies are \$2.50. When ordering by mail, Connecticut residents should add seven percent sales tax and postage and handling of 75 cents for the first copy and 25 cents for each additional copy.

National Hunting &
Fishing Day Sept. 27, 1980
Helping Insure the Future



Woodsmen's field days offer you a glimpse of history

By Robert L. Garrepy, State Forester

If it were possible to go back in time, to an 1860 logging camp located anywhere between Maine and Minnesota, it would become evident rather quickly that the term "good old days" did not apply to the lumberjack. This hardy breed spent three to four weeks at a time living in log bunk houses (often with the horses!), working in continually wet clothing, subsisting on a daily fare of bread, potatoes, mutton, and a poor grade of corned beef, and typically in the woods each day as long as it was light enough to work. A difficult life at best.

However, even in logging camps the Sabbath was observed, and while it is unlikely that there were many religious services, a day of rest gave the woodsmen an opportunity to repair tools, mend clothes, rest, and enjoy whatever recreation was available. Since pay was normally on a piece-rate basis, there was rivalry among the loggers as to who could fell the most trees, buck the most logs, or haul out the largest loads. This competitive spirit naturally carried over to the day of rest when the woodsmen developed a series of contests to determine which of them really were the "best" loggers.

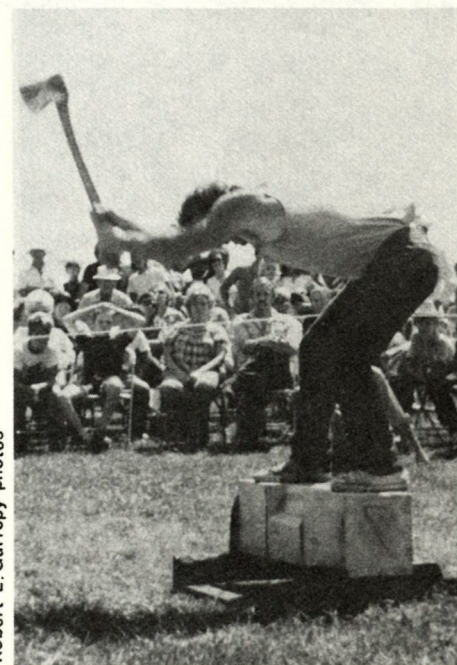
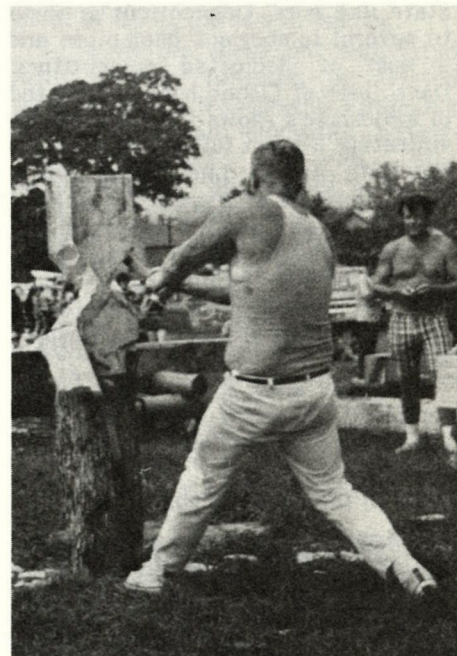
The competitions involved the tools used every day in the woods — axes, bow saws, one and two-man bucksaws, and peaveys (or cant hooks). Axes, of course, date back to prehistoric times when a sharpened stone was attached to a stick and was used more often on one's enemies than on trees! Axes of iron or primitive iron alloys changed little from the days of the Grecian empire until the development of steel in the 15th century. However, good steel axes did not become readily available in the United States until the late 1800s and the early loggers made do with heavy, easily-dulled tools for felling the tree, cutting off the limbs, and chopping the logs to length.

While saws were developed in Europe as early as the mid-1400s, they were not widely used in this country until the early 1800s — mostly because they were very expensive and difficult to maintain. However, as American industry developed, one-man crosscut saws came into general use for bucking purposes, while axes were still used to cut trees down. Not until about 1880 did someone hit on the idea that a crosscut saw, lengthened and fitted with a handle on each end, could be used for felling trees!

A peavy is a stout wooden handle with a metal point on one end and an attached, moveable hook about one foot from the spike end. Invented by Joseph Peavy in Maine about 1858, the tool provided a great improvement on the lever principle, allowing loggers to turn large logs with relative ease.

In any case, the tools and knowledge that made for successful loggers were ideally suited to competitive sporting events. The contestant who had the greatest skill and the best maintained equipment (and who was usually one of the strongest) could be expected to win.

Although modern day logging camps are few and the old-time tools have given way to chainsaws and skidders, a dedicated group of men and women keep alive the spirit of the logging contests. With names such as "Woodsmen's Field Day," "Loggers' Roundup," or "Lumberjack Contests," organized events can be found throughout the United States, and there is now a trend toward international competition. Using chainsaws as well as the more traditional tools, competitors can travel from Connecticut to Washington State participating in a scheduled series of contests where trophies and cash prizes are only part of the reward. More important is the knowledge that one is proficient in a skill that is being lost to history.



Robert L. Garrepy photos

New England has its share of woodsmen's contests, and there are three major events in Connecticut, although not all are run on an annual basis: The Voluntown Volunteers Festival in late July; the Bridgewater Fair in mid-August; and the Goshen Fair, usually over Labor Day weekend. More extensive contests are found in Maine, New Hampshire, New York, and West Virginia, with the World Lumberjack Championships, televised on ABC's "Wide World of Sports," being held in Hayward, Wisconsin, the last week in July.

Strange as it may seem for a small, urban, highly-industrialized State like ours, Connecticut is home to several lumberjack champions and a host of dedicated competitors. Dave Geer of Lisbon has participated in woodsmen's shows for many years, collecting a room full of trophies. In the 20th Annual Lumberjack World Championships at Hayward in July of this year, Geer placed second in the chainsaw finals, fourth in the two-man crosscut event (with Rudy Dettmer, of Ohio), and tied for fourth in the all-around lumberjack standings.

Sven and Ron Johnson, of Jewett City, are a father-son team who have also taken national and international honors. Ron took first place in the recent chainsaw event at

Hayward, an outstanding accomplishment considering there were 160 participants from around the world.

The contests have, like most sports, become far more sophisticated than those of the past. Television replays and electronic "equipment" now allow for split second timing. Special steel for axes and saws and chainsaw events are modern additions to the contests. But the basics — good tools, skill in their use, and strength — remain the same as they were a century ago. There is wide variation in the types of contests run, but they may be categorized as follows: axe-throwing, bow sawing, two-man cross-cut sawing, horizontal chopping, vertical chopping, chainsaw events and log rolling.

Axe-throwing: This is a popular spectator sport although it probably was of little practical use in the woods. Double-bit axes with 24 inch handles, weighing no less than two-and-one-half pounds, are thrown from a distance of 20 feet at a wooden target having a four inch bull's-eye. While the event appears easy, it takes a fair amount of strength and considerable coordination to put the axe into the target. Scoring is an accumulation of points ranging from five for a bull's-eye to one or two for the outside target ring.

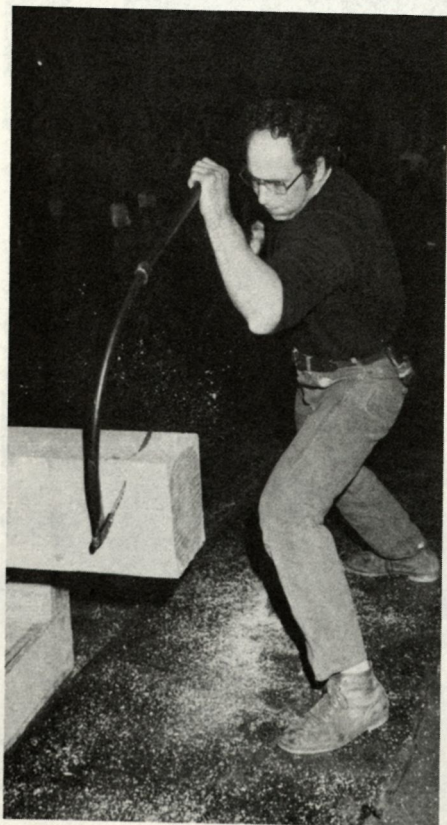
Bucking events: In woods terminology, "bucking" is the term applied to cutting a tree stem into logs or cordwood sticks. In competition, bucking refers to cutting off sections from a squared pine timber using a bow-saw, two-man crosscut, or chainsaw. The bow-saw is a light, tubular-frame saw with a narrow (1½ inch) blade about three-

and-one-half feet long. Small, commercial models are available in hardware stores for cutting cordwood. The competition models have very carefully filed teeth and cut extremely fast. However, the thin, narrow blade twists very easily and will cut a circular kerf or bind quickly in a pine 10 by 10. Good bowsawyers are not common!

The two-man crosscut involves one of several wide-bladed saw models, usually five to six feet long, with handles on each end for the two sawyers. Many competitors use an Australian design made of special steel with teeth that are combination cutters-rakers. American models have cutting teeth with separate rakers (blunt teeth that "rake" out the chips of wood). Cross-cut sawing demands strength, rhythm and coordination between the sawyers. The saw must be sharp, filed evenly on both sides, and be pulled straight through the cut. The person pulling provides the power — the other sawyer guides the saw to obtain maximum cutting efficiency. Incorrectly filed saws bind. Failure to guide the saw correctly or pushing on the part of the tail-sawyer will cause the saw to buckle.

Crosscutting is one of the most exhausting of the events and is little changed from the way trees were felled and bucked years ago. A good cross-cut team can saw through a fresh, 10 by 10 pine timber faster than a stock chainsaw!

Chainsaw events, like the non-mechanized contests, pit the operator against a clock. The fastest time to cut off one, two, or three blocks is the winner. Power saws may be limited to those that can be



Robert L. Garrepy photo



purchased locally or may be unlimited, allowing saws with engines that burn alcohol fuels, can be run only 20 seconds or so at a time without mechanical stress problems, and can shatter eardrums with the exhaust noise.

Horizontal block chopping:

Each contestant draws a 10 by 10 inch pine block, 30 inches long, mounted on a small frame that provides clearance underneath. The chopper must cut through the timber as quickly as possible. Australian axes having wide-bladed, five-pound heads are normally used, with edges honed razor-sharp. Since the width of the chopping cut is 18 to 20 inches, and the block is only 30 inches long, the chopper has only five or six inches on each end for his feet. Watching someone swing a very sharp axe as hard as he can and hit within an inch of his foot can raise goose bumps on an observer. Fortunately, accidents are rare.

Vertical block chopping: Here the block is mounted vertically on a stand that places the mid-point about 30 inches from the ground so it's much like cutting down a tree. The contestant must chop through the block — the shortest time wins. In this event, power and strength are as important as the sharp axe because, unlike the horizontal chop, it is difficult to get leverage when standing up and chopping sideways.

Log rolling: While not appearing to be difficult, log rolling is physically demanding, requiring muscular strength, coordination between the two partners, and experience in "reading" the weight distribution in a log. In the Northeast, two contestants must roll a log, 12 feet long and 10 to 12 inches in diameter on the small end, along a

40-foot course and back again, touching two stakes at each end of the course. Using peavys, they wouldn't seem to have a hard task, but the stakes are set apart eight inches less than the length of the log, making placement critical. Compounding the problem is the log's weight — as much as 1,000 pounds — too heavy to pick up and drag so it must be rolled. A butt end much larger than the tip or a crook or a bump in the log can add to the problems of rolling.

Although 10 by 10 squared pine timbers are relatively easy to obtain and offer a challenge to competitors, other round and squared materials are used in some contests. Red maple, oak, and hemlock make for tougher cutting and sizes are reduced to eight by eight inches or even six by six inches. At Hayward, 20 inch round pine is used for sawing contests.

As a result of competition from Western states, other events have been incorporated into national competition. Birling is a contest where two opponents balance on a floating log and try, by spinning the log, to dump one another into the water. West Coast logging often involves rafting of sawtimber much larger than that found in the Northeast. Birling was a natural offshoot of a skill needed to negotiate floating sawlogs.

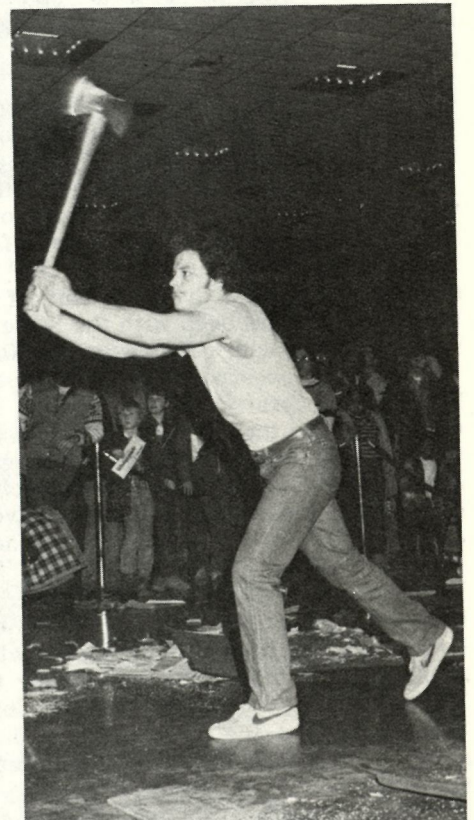
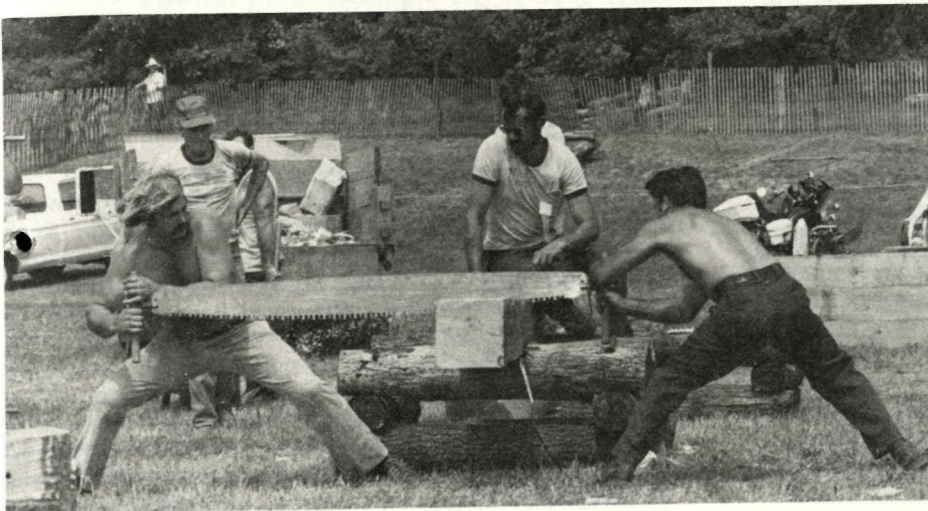
Tree climbing is also a West Coast specialty. Although mechanized spars are now common, not long ago tall trees were used to hang the cables required to haul sawlogs from the stump to a central area. The "spar tree," anywhere from 100 to 200 feet tall, had to be climbed (cutting off limbs on the way up), topped (cutting off the top 30-50

feet), and wired for pulleys. A "topper" normally did only one tree per working day, so exhausting was the work.

In competition, contestants, using climbing spurs and a wire-cored climbing belt, race the clock and each other up 100 foot tree trunks, ring a bell and climb down again. "Climb down" is a misnomer, for in actuality the individuals literally drop the 100 feet, barely controlling the descent with the rope and perhaps three jabs with the climbing irons. As a comparison, you might try running upstairs in a nine-story building to test wind and leg. A tree climber would be up and down before most of us hit the fourth landing!

Even for those not associated with logging, forestry, or related occupations, a Woodsmen's Field Day can provide an enjoyable outing. Local contests are run quite informally and spectators have the opportunity to talk to the choppers, inspect tools, and maybe even try their hand at some of the events.

For additional details on Loggers' Field Days held in the Northeast, contact State Forester Robert L. Garrepy, Connecticut State Forestry and Fire Control, State Office Building, Hartford, CT 06115 or the Northern Logger and Timber Processor, P.O. Box 69, Old Forge, NY 13420. ■



Licensing unit moves the papers to keep state's sportsmen afield

By Jenny Mead, Massachusetts Audubon Intern

They handle over 25,000 applications for deer hunting permits and 217,000 sportsmen's licenses a year. Approximately 3,500 applications for personal use lobster licenses and 800 applications for commercial lobster licenses flow through their office annually. Each fiscal year they deposit approximately \$3,000,000 to the State's General Fund and \$4,000,000 in federal funds. Every month, they sell an average of 400 bus passes to State employees. And then there are the X-ray registrations, the recording of State park camping and parking fees, and the Charter Oak passes that are their responsibility.

"They" are seven women and one man, the full-time staff of the DEP's Bureau of Licensing and Revenues, a section of the Business Administration Unit. Directed by Lillian Bramanti, Business Services Officer, the Bureau has a wide range of responsibilities, ranging from registering commercial fishing licenses to handling bad checks received by DEP units. "We have something to do with every unit of the DEP," says Bramanti, who has been with the State for 27 years and with Licensing and Revenues since May 1979. Most of the staff has been with the DEP since its inception in 1971, and several members worked for the Boating Commission or the Fish and Game Commission previous to that. The particular duties of each staff member are different, but according to Cheryl Johnson, a member of the staff for one and half years, "Everybody will help out when there's some big job to be done."

The complexity and magnitude of some of the Bureau's responsibilities is exemplified by the deer lottery, held every March to decide which hunters will be able to hunt on state land during the deer season. DEP's Wildlife Unit conducts the lottery, then the Bureau receives the applications and fees, which the staff must process before sending out the permits in September. Sound simple? Well, there are four different permit types available, each with its own

specified season, and three different methods of take. In response to demands from shotgun hunters and because of the increased deer population, the State land shotgun season is split this year into two different parts, increasing the number of permit holders. In addition, there are distinctions between both private and state lands and resident and non-resident permits, as well as special licenses for landowners and their lineal descendants. The overall number of deer permits has increased steadily over the years, and this year the lottery should almost double from the approximately 9,000 permits issued in 1979.

Jim Elliott, who has been in the unit for two and a half years, is responsible for fishing and lobstering licenses. There are 14 different types of commercial and non-commercial licenses which cover the whole gamut of fishing, including shad, finfish and bait dealer licenses. "Every once in a while you want to throw up your hands and walk out. It does get hectic, but basically it's very challenging." Elliott is proud of the unit's efficiency in handling lobster license applications, saying that 70 percent of the time a license is sent out between 24 and 48 hours after the application arrives. He attributes the popularity of lobstering in part to the high cost of seafood and meat.

This unit is also responsible for the depositing of all monies received by the DEP Hartford office. Betty Seymour, a 30-year veteran, prepares the bank deposits and forms necessary for the State Treasurer and State Comptroller. Seymour also receives deposit slips from the various DEP regional offices for the State Park camping fees, admissions, wood cutting permit and Charter Oak Pass monies deposited in local banks. She notifies the State Treasurer and State Comptroller of these deposits and keeps a journal of all activities for each DEP facility.

While the Bureau's staff members sell some licenses in their office in the State Office Building, sportsmen's licenses, for example, which permit holders both to hunt small game and to fish, are distributed to the town clerks who sell them to the public and return the money and unused licenses to the Bureau. Helped by other staff members in keeping a record of the over 217,000 sportsmen's licenses that are sold annually, Lorraine Massaro is in charge of, as she puts it, "keeping the town clerks happy" by trying to give good service in supplying the licenses and information that goes along with issuing them. Record-keeping is an inevitable and time-consuming part of this job, and Massaro is responsible for making sure that correct amounts of money are received from the town clerks and also that lost licenses are reissued.

Not all of the licensing traffic is such big business. In addition to the fishing, hunting, and trapping licenses, the staff handles permits for such things as taxidermy, fur buying, and any form of hunting using a dog pack. All X-ray machines used in the State must be registered with the Bureau, a responsibility taken over from the Health Department in 1971. Licensing and Revenues is also the only unit in the State Office Building which sells bus passes to State employees. "It's something we're doing merely as a service to State employees. There's no profit involved," says Bramanti. The unit also sells Charter Oak Passes to State residents, good for entry to most Connecticut

State Parks during the week and on Saturdays, issues them free to resident senior citizens, and keeps the State parks' reports of how many are sold.

The nature of the DEP licensing unit results in frequent contact with the public. Most of the staff members agree that such contact is one of the most rewarding and, most of the time, pleasant aspects of their jobs. Dealing with customers, says staff member Ann Thibodeau, is "interesting. You get all kinds, in all conditions. On the whole, they're pleasant, except for those who are late with permit applications. We have a deadline, and that's it. We can't accept an application if it's late." As the "phone lady" of the unit, Teresa Gallo deals with all types of calls. Despite some headaches, especially around deer season, she likes dealing with the public who, she feels, generally appreciate what the unit does. "We send applications, books, maps, pamphlets, anything that makes it easy for them. We handle a very heavy work load, but reach our deadlines and are courteous."

According to Bramanti, the atmosphere in the Bureau is casual and close. "The workers here have a feeling for people. It's not just part of the job. They try to help them as much as they can, and the public really appreciates it. We've had numerous comments about it." Massaro agrees, adding that the nature of the Licensing Bureau brings out the best in people. "Most people who come in here are vacationers, hunters, lobster fishermen, or pleasure lovers. They know they're going to do something in which they'll have fun, so they joke and kid with us."

There are unpleasant incidents, however. Individuals who are not chosen for a deer hunting permit in the lottery sometimes get angry. "Hunters can be very difficult," say Bramanti. Occasionally, there are other individuals who cannot get a license or miss a deadline because of an improperly filled-out application. "We have a lot of problems where people don't see why the rules can't be broken. We go strictly by the rules here," says Bramanti.

Life in Licensing and Revenues does have its humorous moments, however. According to staff member Helen Rogers, people who come into the office to fill out applications often don't know their eye color, weight, or height, and have to ask the staff to tell them or give an approximation. Also, says Thibodeau, "There are people who will fill in 'bloodshot' for 'color of eyes' and 'very sparse' for 'color of hair'." The staff members also suffer the unfulfilled promises of deer hunters and lobstermen. Gallo says, "We're always getting promises from deer hunters of deer steaks and sausage and from lobstermen of lobsters, but they never come in."

The secret of success at Licensing and Revenues seems to be both inner and outer harmony. Thibodeau says, echoing the sentiments of the other staff members, "We work with a good bunch in here, so that makes it pleasant." Rogers agrees, adding that the job is made interesting by "all different little duties. There's not a chance to get bored. We jump from deer to fish and all around." Although Bramanti is kept busy by her involvement in the unit's different activities as well as by compiling treasurers' reports and keeping up on legislation "pertaining to anything we handle," she also enjoys the responsibility of "doing all we can to help the residents of Connecticut enjoy their pastimes."

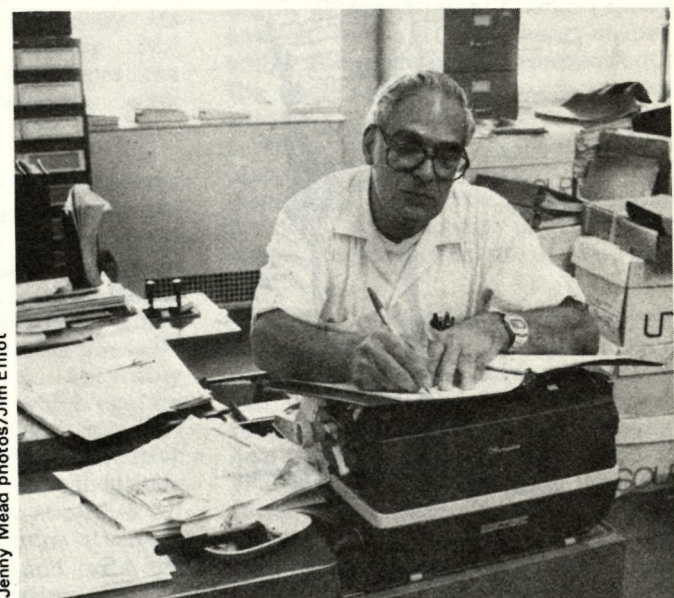
Lillian Bramanti, Lorraine Massaro

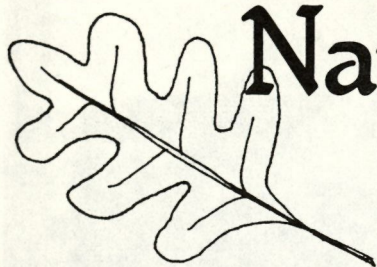


Ann Thibodeau



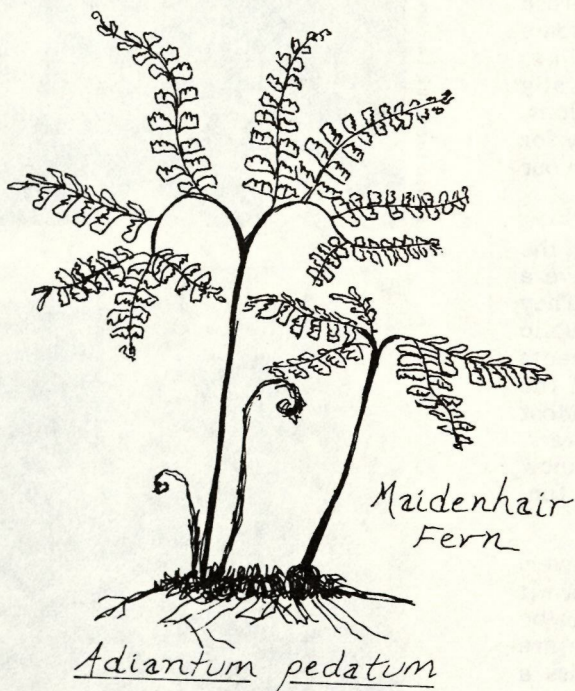
Jenny Mead photos/Jim Elliot





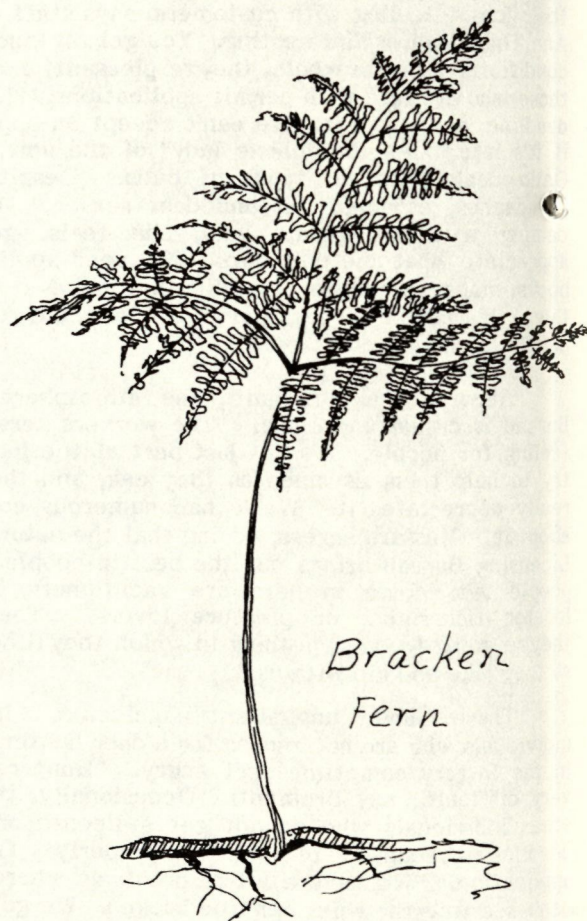
Nature Notes

by Penni Sharp



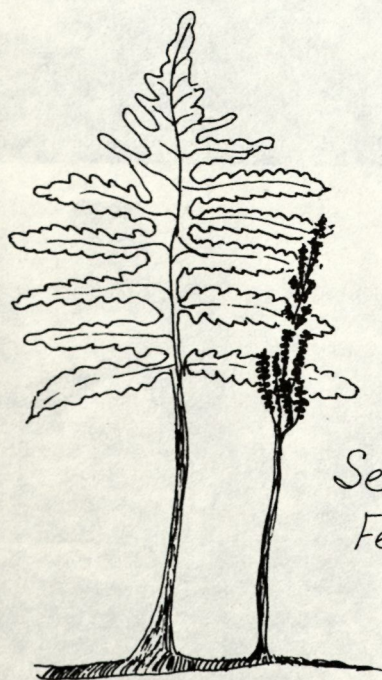
Maidenhair
Fern

Adiantum pedatum



Bracken
Fern

Pteridium aquilinum



Sensitive
Fern

Onoclea sensibilis

Ferns

Ferns are non-flowering plants that are found almost the world over. Although they are most diverse and abundant in the tropics, ferns are well represented in North America. Approximately 10,000 species of ferns are known to exist today. About 50 species can be found in Connecticut. This relatively limited number of species simplifies the task of fern identification, and thus ferns are an ideal subject for study and enjoyment.

Much of Connecticut is forested land. The woodlands can be cool and inviting during the hot days of summer and early autumn due to the shade cast by their trees. Flowering plants are usually not able to grow and thrive under dense shade, but many species of ferns flourish under these conditions. Moist woods are a good place to look for different species of ferns. Although most ferns prefer damp, shady sites, ferns can also be found growing in other habitats such as roadsides, open meadows, and rocky ledges.

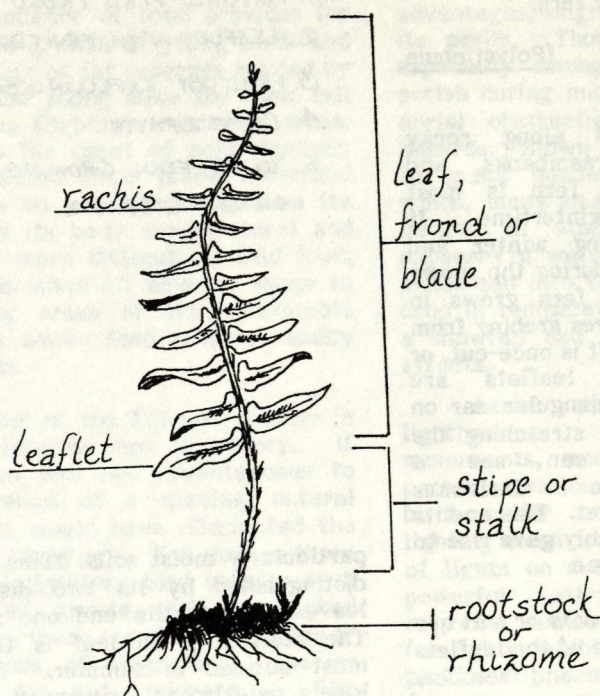
Thoreau once said, "Nature made ferns for pure leaves to show what she could do in that line." Fern leaves come in all sizes and shapes, ranging from simple, entire leaves to lacy ferns with many leaflets and subleaflets. Learning the basic morphology of ferns is an essential step towards identification. There are several good keys to ferns which are based upon the characteristic of the leaf form.

The basic structure of a fern comprises a rootstock or rhizome which supports the plant above and the roots below; the stalk (or stipe) which supports the leaf; and the leaf itself (frond or blade). Many ferns have compound leaves, and the divisions are known as leaflets. The part of the stem carrying the leaflets is the axis.

A fern leaf unrolls in the spring from a coiled form referred to as a fiddlehead or crozier. This growth habit is known as circinate vernation and is a distinguishing feature of true ferns. Another characteristic of ferns is the pattern of the veins in the leaves. The veins branch dichotomously, or in two equal parts, on a typical fern leaf, whereas the veins on the leaves of flowering plants branch irregularly.

As previously stated, leaves can be either simple or compound. A compound leaf that is divided once is called once-cut or pinnate. Leaves divided two or three times are twice-cut or bipinnate and thrice-cut or tripinnate, respectively.

The leaf structure is important for identification purposes. With patience, the often intricate leaf patterns can be distinguished, and the characteristics of a particular leaf will help with the proper identification of an individual fern.



(*Polystichum acrostichoides*)

Fern life cycles

A most interesting aspect of this group of plants is their means of reproduction or life cycle. Fern reproduction was poorly understood until relatively recent times. It was once believed that ferns had invisible seeds, and that those carrying the seed were made invisible by its power. In "King Henry IV," Shakespeare writes, "We have the receipt of fern-seed, we walk invisible."

True ferns reproduce by means of spores. Although there are variations, the typical pattern is for small sori or fruit dots to appear on the underside of a fern frond during midsummer. These fruit dots, which incidentally are diagnostic features for different species, are tiny clusters of spore cases which contain the spores. In some ferns, the sori are covered by a thin protective membrane known as an indusium. When ripe, the spore case pushes off the indusium. The case itself is sensitive to moisture, and on a dry day it will burst, releasing the ripe

spores which are able to move long distances on a dry wind.

One fern plant produces literally millions of spores in a single season, yet comparatively few will land in suitable environments to grow to their next phase. When a spore does reach an appropriate place it develops into a gametophyte. It begins as one cell and divides rapidly until it forms a small heart-shaped body. The gametophyte contains both the male and female organs, and when conditions are right, fertilization occurs and a new fern plant begins to grow on the gametophyte. The gametophyte provides nourishment in the early stages of development of the new plant.

In Connecticut, many of our fern species can be readily observed during a walk through the woods or a visit to a wetland. Some species are rare and are confined to particular habitats such as limestone ledges. If you wish to get acquainted with the ferns of Connecticut, some of the species that you are sure to find are Christmas fern, bracken fern, sensitive fern, and cinnamon fern.

Less common, but one to look for, is the lovely maidenhair fern.

Christmas fern (Polystichum acrostichoides)

Readily found along rocky slopes, wooded streambanks, and ravines, this hardy fern is most noticeable in the wintertime. It remains green during winter and brightens the woods during the snowy season. Christmas fern grows in large clumps, its leaves arching from a central rootstock. It is once-cut, or pinnate, and its leaflets are distinguished by a triangular ear on the upper side. By stretching the imagination, one can see a resemblance between a Christmas stocking and the leaflet. This and its evergreen habit probably gave rise to the fern's common name.

The round fruit dots or sori are found on the underside of the leaflets anytime between June and October. They form two or more rows and sometimes entirely cover the back of the leaflet. The numerous round brown fruit dots are diagnostic for Christmas fern.

Bracken fern (Pteridium aquilinum)

Bracken fern is found commonly throughout Connecticut. It grows in many habitats and is even a plant of waste places. It can tolerate full sun, semi-shade, or shaded conditions. Its presence often signifies former disturbance and/or poor soils. Bracken fern often grows in large colonies. Susceptible to frost, the fern wilts quickly, turning brown but remaining upright.

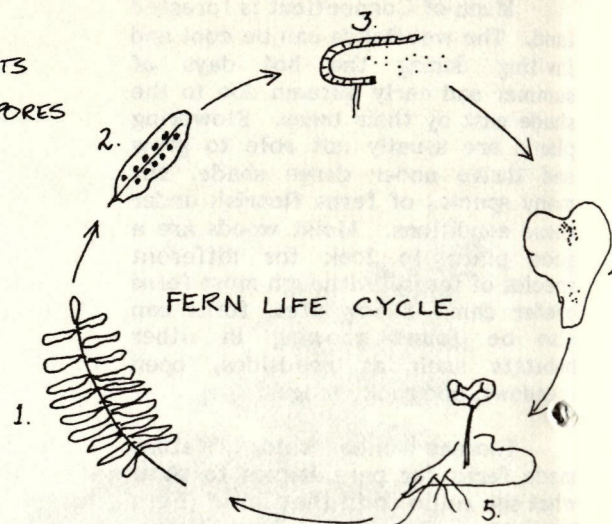
The leaves of bracken fern are broad and triangular. The lower portion of the leaf is bipinnate, or twice cut, yet the uppermost leaflets are simple. The fruit dots occur as narrow lines near the margins of the leaflets. They appear silvery at first, turning brown as they mature.

Bracken fern often grows in pastures. Horses and cattle feeding on it have developed vitamin B deficiencies. This is because bracken fern produces the enzyme thiaminase which breaks down thiamine (vitamin B₁).

Sensitive fern (Onoclea sensibilis)

Sensitive fern grows throughout Connecticut in a variety of habitats,

1. MATURE FERN FROND
2. LEAFLET WITH FRUITDOTS
3. FRUITDOT EXPELLING SPORES
4. GAMETOPHYTE
5. YOUNG FERN GROWING ON GAMETOPHYTE



particularly moist soils. This fern is distinguished by its two dissimilar leaves, one fertile and one sterile. The sterile, green leaf is the one most noticed in summer. It is a lovely pale green, triangular shaped leaf. It is once-cut and has a winged rachis (or principal stem). The veins on the leaflets are net-like, not the usual dichotomous veins of other ferns.

Another name for sensitive fern is bead fern, and this accurately describes the fertile fronds which resemble dark brown beads on a stalk. The sterile leaves of sensitive fern wither at the first frost, and this fact probably accounts for its common name. The fertile fronds persist throughout winter.

Cinnamon fern (Osmunda cinnamomea)

This vigorous, impressive fern grows profusely in swamps, on streambanks, and in moist, shady sites. Its tall fronds radiate from a stout rootstock. The leaves of cinnamon fern are twice-cut, and light brown wooly tufts occur at the base of the leaflets. The fertile leaves grow in a ring on the outside edge of the rootstock and are the first to unfold. At first they are bright green, but soon turn to a cinnamon-brown.

The club-shaped leaflets bear the spore cases. The spores of cinnamon fern contain chlorophyll and must germinate within a few days after being shed. In the spring, the large fiddleheads of cinnamon fern are prominent. They are initially covered with a silvery down which

becomes cinnamon-brown as the leaves grow.

Maidenhair fern (Adiantum pedatum)

The graceful maidenhair fern grows in rich moist woods and long rocky ledges. In Connecticut it is most abundant in the limestone regions in the northwest corner of the State.

A distinguishing mark of this delicate fern is the dark brown stalk. The stalk extends about 18 inches and forks into two parts that bear the leaflets. The flat lacy fronds are a bluish green. The fruit dots occur on the outer margins of the leaves and are covered with a grayish-white indusium.

Maidenhair fern has a tradition in folk medicine and was apparently used by the Indians of eastern North America as a cure for respiratory ailments.

These are but a few of the ferns that can be observed and enjoyed in Connecticut. The following books are recommended as aids in fern identification:

Cobb, Boughton. A field guide to the ferns. Houghton Mifflin Company, Boston. 1963.

Wiley, Farida A. Ferns of northeastern United States. Dover Publications Inc., N. Y. 1973.

Britton, Nathaniel Lord, and Hon. Addison Brown. An illustrated flora of the northeastern United States and Canada. Dover Publications Inc., N. Y. 1970.

Bird migration: why and how

By George E. Brys, Wildlife Biologist,
DEP Wildlife Unit

This fall the semi-annual phenomenon of bird migration will again fill Connecticut's skies with thousands of birds winging their way southward. Birds of all sizes and types will be leaving their summer breeding grounds for wintering areas, sometimes thousands of miles away. Who hasn't, at some time, watched great Vs of Canada geese or a procession of hawks soaring southward along the ridgetops on a fall day and not pondered the questions, "Why do birds migrate?" and "How do they find their way?"

Over the years, ornithologists, scientists who study birdlife, have devoted considerable time and research to these and other questions about bird migration.

The answer to the question "Why?" lies in the advantages posed by such an undertaking. Through migration, birds can enjoy the summers of the northern latitudes while escaping the rigors of arctic or temperate zone winters. On summer range, habitat and weather conditions are ideal for the establishment of breeding and nesting territories and

the hatching and rearing of young. The abundance of food provides for the rapid growth of young birds and the storing of fat reserves needed by adults and young alike for their fall migration flights to wintering areas. Prior to the onset of cold weather, which would both place increased demands on a bird's metabolism (to maintain its body temperature) and make it more difficult to find food, the birds move off summer range to wintering areas in more favorable climates where food is more readily available.

Most of the 775 bird species in North America are migratory. If migration was not advantageous to the survival of a species, natural selection would have eliminated the tendency long ago. Yet, just as there are non-migratory bird species such as ruffed grouse and ring-necked pheasant, there are also individuals or populations of migratory species which do not migrate. The permanent resident flocks of Canada geese in Fairfield county are an example. Also, the summer and winter ranges of a given species are not always separate and distinct from one another. A black duck summering in Labrador may find Connecticut's coastal marshes excellent winter habitat while these same marshes have been vacated by black ducks which winter farther south along the Atlantic coast.

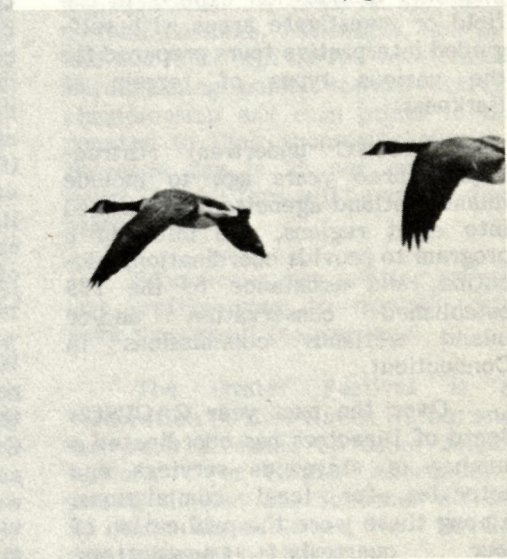
Despite its apparent advantages, migration is not without its perils. Thousands of migrants, especially among the smaller birds, perish during migration. Storms and aerial obstructions are the major hazards. Blown off course or unable to make headway against gusting winds, many smaller birds which get caught in storms while crossing expanses of water drown after falling exhausted into the waves. A sudden drop in temperature accompanied by a snowfall can also have disastrous effects.

Aerial obstructions such as lighthouses, tall buildings, monuments, and television towers present a serious threat to migrating birds under certain weather and lighting conditions. The bright beams of lights on such structures have a powerful attraction for night migrants similar to the fascination for lights exhibited by many insects, particularly nocturnal moths. On foggy nights the attraction is most noticeable, as the lights not only attract but also dazzle and confuse the birds, causing them to collide with the offending structures.

Exhaustion, once thought to be a real factor in migration-related bird mortality, has been proved to be a virtually nonexistent peril, except under unusual circumstances. Migrating birds use their stored body fat to power their migratory flights so efficiently that even birds which have just completed long non-stop flights land only slightly tired, nowhere near a state of exhaustion or emaciation.

The second question, "How do they find their way?" has been the

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For Your Information

CACIWC combines business, tours

The Connecticut Association of Conservation and Inland Wetlands Commissions (CACIWC) will hold its third annual meeting Saturday, October 18, at Harkness Memorial State Park in Waterford.

The meeting's morning program will center on election of officers — president, vice president, treasurer, and secretary. Member Commissions wishing to sponsor a candidate should contact Mary Dishaw, chairperson of the nominating committee at 653-6188.

October 18 will also be a family day, offering an afternoon program investigating the diversity of wildlife habitat found at Harkness. Recognizing "The Year of the Coast," the program will emphasize the need to protect these delicate and complex natural resource systems. There will be opportunities for commission members to question experts in the field or investigate areas with self-guided interpretive tours prepared for the various types of terrain at Harkness.

CACIWC underwent restructuring three years ago to include inland wetland agencies, reorganized into eight regions, and initiated a program to provide coordination, education, and assistance to the 239 established conservation and/or inland wetlands commissions in Connecticut.

Over the past year CACIWC's Board of Directors has coordinated a number of statewide services and activities for local commissions. Among these were the publication of four quarterly newsletters;

By Martina Delaney,
Citizens' Participation Coordinator

dissemination of the USDA publication, "The Homeowner and the Gypsy Moth: Guidelines for Control," to Conservation Commissions; and the first in a series of information sessions designed to inform inland wetland enforcement officers and other municipal officials about best management practices for wetland activities.

During the year six of the eight conservation and Inland Wetlands Commission counties/regions have organized. They are Litchfield, Fairfield, New Haven, Hartford, Tolland and Middlesex. Holding the annual meeting in New London County should, it is hoped, stir interest in regionalization in that area.

CACIWC's Board of Directors also voted unanimously to support Barbara Obeda who was removed from the Brookfield Inland Wetlands Commission "for cause" by the town's Board of Selectmen. After considerable investigation into the merits of the case the Connecticut Fund for the Environment (CFE) agreed to file an amicus curiae (friend of the court) brief on behalf of CACIWC, as well as on behalf of its own members. Obeda was reinstated to the commission by order of both the Superior and Supreme Courts of Connecticut.

Conservation and Inland Wetlands Commissions will be receiving further information about the October 18 meeting from CACIWC. Non-member commissions and other interested persons are welcome to attend and can contact either Michael Prislow, 566-3540, or Martina Delaney, 566-3489.

Bird migration From page 11

subject of much research and is perhaps the most fascinating aspect of bird migration.

Many birds use the same summering or breeding grounds, migration routes, and wintering spots year after year. Movement over short distances may be guided solely by using visual landmarks to provide turning points and directional cues, combined with the bird's inborn migratory traits. More sophisticated systems of navigation must be employed by birds whose migration involves longer flights over more complex routes. Scientists have found through experiments that birds possess an amazingly accurate "internal clock" which they use, in combination with cues taken from the paths of the sun or moon and the location of the stars, to navigate.

Visual landmarks and navigational cues derived from the sun, moon, and stars are used during favorable weather conditions, yet even on the darkest and foggiest nights migrating birds have been tracked, on course, by scientists using radar. The earth's magnetic field is believed to be the source of the environmental cues being used to navigate under these conditions, and experimental evidence tends to support this theory.

Scientists are continuing to study the mysteries of bird migration using increasingly sophisticated technology. Still, as each question is answered through research yet another is raised.

This simple discussion of the two questions pondered by many who take the time to notice migrating birds has left many of the details of what is known about bird migration unmentioned. For the reader whose interest has been raised, the following references are offered:

- Bellrose, F. C. Ducks, geese, and swans of North America. Stackpole Books, Harrisburg, Pa. 1976.
- Fisher, A. C., Jr. Mysteries of bird migration. National Geographic Magazine, 156 (2): 154-193.
- Lincoln, F. C. Revised by S. R. Peterson. Migration of birds. U. S. Fish and Wildlife Service Circular 16. 1979.



71 capitol avenue hartford, conn. 06115

CAM NEWS

CAM preparing history of our coast

By John Surowiecki

Throughout its history, the Connecticut coast has been the focal point for man's activity in the State. From the heyday of the Indians to the present day, the patterns of development have remained somewhat similar.

This summer, the Coastal Area Management Program began work on a booklet on how the Connecticut coastline has changed in the last 300 or so years. The history — actually more of a historical narrative — is written to be broad, accessible, and entertaining, focusing on the economic and social development of the shore from the biological paradise it was before the arrival of the Europeans to the industrial megalopolis it is today. The booklet is written for teachers, students, and citizens interested in the heritage of the Connecticut coast. It concentrates on the people who lived in the shore towns, on what events influenced their lives, and on how they used the natural resources of the coast and the Sound. In a way, it is a nostalgic journey. But nostalgia does not always have to be frivolous. When one talks about how the shore line developed, one must also talk about how it has been abused.

The booklet begins as all histories do, at the beginning; in this case, with the Indians. Life along the coast before the Europeans arrived was essentially in harmony with the environment; the Sound provided food — clams, crabs, fish — all in incredible quantities. Lobsters, in fact, were so plentiful that the Indians had tired of eating them and used their meat as fishing bait. But that harmony was not to be a long-term affair. The English settlers who came to the shore ruled it with the iron fist of Puritanism, exhausting the tillable land, razing the forests, and depleting the store — once considered infinite — of marine life.

During the colonial period, shipping and shipbuilding emerged as the two staples of coastal life. Great Britain treated Connecticut with a kind of benign neglect, giving its attention to wealthier colonies like Virginia and New York. And so Connecticut had to survive, the victim of British indifference and an unfortunate geographic location. (One writer called Connecticut, "a cask of good liquor tapped at both ends, at one of which Boston draws, and New York at the other, until little is left in it but settlings.")

Since direct trade with England was the exclusive right of Boston and New York, towns like New Haven, New London, Norwich, Stonington and Fairfield had to find their own markets. They eventually did, in the Caribbean, and a commercial marriage took place between the "Land of Steady Habits" and the exotic islands of the West Indies which was to last almost into the 20th century. During the Revolution, Connecticut gained a reputation as "the provisions State" because it supplied so much of the clothing, arms, powder, and rum for the American armies. Later this penchant for manufacturing led to the establishment of factory villages (such as Eli Whitney's Whitneyville outside New Haven), which further evolved into industrial cities.

The face of the coastline changed most dramatically in the 19th century. New London became the third greatest whaling port in the world, while New Haven and Bridgeport emerged as manufacturing centers. With the advent of the steamship, and then the railroad, the less populated areas of the coast grew into resort areas and vacation spots.

In our time, with the continued growth of industry, the construction

of highway systems, and our demand for housing, the character of Connecticut's coast has been irreversibly changed. Since 1914, when the first inventory of coastal wetlands in Connecticut was conducted, nearly fifty per cent of the total marsh areas has been destroyed, lost by filling for houses, industrial sites, airports, dumps and commercial centers.

The booklet also includes sections on the struggles of the modern shellfish industry, the decline of coastal ports, and the need for public beaches, and concludes, as all histories should, with an account of what the future holds in store for the coast.

Look for publication later in the year.

John Surowiecki is presently completing his requirements for the Ph.D in English at UCONN. His work this summer was sponsored under the auspices of the Massachusetts Audubon Society's Environmental Intern Program.

Schooner schedules sixth oyster festival

The Annual Schooner Oyster Festival has been scheduled for Saturday and Sunday, September 13 and 14, at Lighthouse Point Park, New Haven. In addition to the usual food and entertainment on Saturday, Schooner will run a series of canoe competitions between male/female teams representing non-profit organizations. A cross-harbor race, sprints, costume, backwards, and in-and-out races will be run with teams accumulating points toward overall championship and cash prizes to be donated to their sponsoring charity. Entrance fee is \$5 per canoe per event, and all fees will be awarded as prizes.

Schooner is also inviting artists and craftspersons to display their work throughout the weekend.

The Oyster Festival is a celebration of New Haven Harbor and has been attended by some 20,000 visitors. For further information, please contact the Schooner office, 60 South Water Street, New Haven, CT. 06519 (865-1737).

208 water quality management

208 examines
silviculture non-point source
pollution

Silviculture is the cultivation and harvesting of timber for commercial purposes. It includes all related activities such as reforestation, pest control, fire retardation, and road building for logging operations. In Connecticut, over 58 percent of the land is in commercial forest. However, most of the State's logging operations are small when compared to those in Northern New England or the West.

Silvicultural operations are capable of causing five types of water pollution. 1) Sediment can find its way into nearby water bodies as the result of erosion caused by either the actual timber harvesting or its aftermath, or by improperly constructed skid roads, landings, and stream crossings. 2) Logging debris which washes into streams can clog their channels, causing stream bank washouts and flooding. These can result in increased erosion and sedimentation. 3) Thermal pollution, or raising stream temperatures to the point where cold-water species such as trout and salmon can no longer survive, is the result of logging of stream banks which eliminates shade. 4) Chemical applications in the form of herbicides, defoliants, and insecticides can be washed into nearby lakes and streams by rain water. Some of these chemicals are toxic to aquatic life. 5) Fertilizers and soil conditioners can also be carried by storm water into lakes and streams. Such nutrients can accelerate the growth of plants and algae resulting in increased eutrophication of lakes and downstream impoundments.

As part of the current 208 Program in Connecticut, the effects of silvicultural practices in the State have been examined as possible generators of these non-point sources of pollution. The State Forester has developed Best Management

Practices (BMPs) for silvicultural treatments to control non-point source pollution.

A pamphlet entitled "Logging and Water Quality in Connecticut: A Practical Guide for Harvesting Forest Products and Protecting Water Quality" is now being compiled for the 208 Program by the DEP State Forester. Copies of the pamphlet, from which the following examples of BMPs have been drawn, will be available in the fall.

BMPs, for the most part, are common-sense activities that can prevent pollution from occurring rather than treating it after the fact. Since erosion is the most common problem associated with logging, most BMPs are designed to deal specifically with its prevention. Virtually all erosion caused by timber harvesting in Connecticut occurs during the logging operations and the following year. Effective erosion controls do not require specialized equipment or knowledge; regular logging equipment and common sense is all that is necessary.

The proper placement of logging roads, skid trails, and landings can be the most effective method of controlling water problems and erosion. For example, skid trails and logging roads should avoid slopes exceeding 10 percent, except for short distances. Flats, swales, and benches where water cannot be drained away should also be avoided. Landings should be located on well-drained soils, with a slight slope away from the access road to facilitate drainage.

Stream crossings are often inevitable on logging jobs. But again common sense can prevent serious erosion and sedimentation problems. Stream beds should never be used as skid trails. Stream crossings should be made at right angles and should avoid steep approaches. Wherever possible, sediment catching pools which can be cleaned when the job is finished should be located immediately downstream of a crossing.

To further protect water courses, buffer strips of undisturbed land should be left between the water and skid trails, roads, and landings. Depending on adjacent slopes, these strips should be from 30 to 100 feet wide. Such buffers allow eroded

material to settle out before reaching the water. They also prevent thermal pollution by preserving shade. Some cutting may be allowed in a buffer strip, but the use of a skidder or tractor in such an area should be avoided.

During active harvesting operations, the potential for damage to logging roads, skid trails, and landings by erosion is greatest. Because logging equipment is continually disturbing the soil, a condition is created where even light rain can cause erosion. Therefore, BMPs must be used to minimize the amount of soil disturbance and erosion and prevent eroded soil from reaching a water body and entering it as sediment.

Timber constitutes a major, renewable resource in Connecticut. Increased demand is being placed on the State's woodlands as people begin to again utilize wood as a fuel for heating. Coupled with the steady demand for sawtimber, this means that silvicultural operations will be on the increase in the future. The Connecticut 208 Program is attempting to insure that the water quality of the State's lakes and streams does not suffer as a result of such activity. By using common sense, both of these natural resources can be managed compatibly.

By Joseph M. Rinaldi,

208 Public Participation Coordinator,
P.O. Box 1088, Middletown, Ct. 06457

Festival celebrates Sound

"Soundfest '80," a two-day festival featuring sailing and research vessels and an oyster roast is set for September 20 and 21 in Bridgeport.

The "J.N. Carter" and "R/V Oceanic" will be among the boats docking at Union Square dock in Bridgeport for the event sponsored by the Long Island Sound Taskforce of the Oceanic Society. The Stamford based environmental group has lined up research vessels, working fishing boats, and sailing ships for the festival.

Open free to the public, it will run from 10 a.m. to 6 p.m., Saturday and noon to 5 p.m., Sunday.

For festival information, call LIST at (203) 327-9786. ■

By Jack Gunther

Saving space... how to form and operate a local land trust

Connecticut

Land Conservation Trusts

Connecticut can take pride in having more than seventy local land conservation trusts seeking to preserve in their natural state significant areas of open space land. The land trusts hold more than ten thousand acres including a great many modest sized tracts of less than ten acres scattered throughout our towns where they can be seen and enjoyed by the general public. The open spaces held by land trusts are a necessary supplement to the large preserves held by national conservation organizations where the emphasis is on protecting endangered species and preserving areas with the greatest natural diversity. In addition to the protection of local natural resources, land trusts provide a means by which the variety, beauty, and individuality of a town can be preserved.

Editor's Note: Jack Gunther is an attorney. He founded the New Canaan Land Conservation Trust in 1967 and has served as its president since. He has been the chairman of the New Canaan Conservation Commission since its appointment in 1966 and has served as chairman of the New Canaan Inland Wetlands and Watercourses Commission since 1974. Gunther is a past president of the Connecticut Association of Conservation Commissions. In 1973 he received an environmental award from Governor Thomas Meskill for his leadership role in land trust activities.

The following is the first half of a two-part article.

Author's Comment: This article has been written with a three-fold purpose in mind.

First, I have attempted to present a broad cross section of what is involved in forming and operating a local land trust to encourage groups wishing to form land trusts but hesitant to proceed without knowing more about the mechanics.

A land trust is usually formed by a group of citizens in a local community who share a concern for the loss of open space land to encroaching development, the rapid rate at which valuable natural resources are being disturbed, and the threatened loss of an appealing community atmosphere. Successful local land trusts require a dedicated volunteer effort. They provide a unique opportunity for widespread public participation in preserving environmental quality through the conservation of open space land. Some eleven thousand residents of Connecticut are either engaged in the operation of local land trusts or support land trusts as dues paying members. A few land trusts enjoy memberships of over 500.

Many town governments give all possible support and encouragement to local land trusts, particularly in the face of the lack of public funds at the town level available for the purchase of open spaces. Also, towns have been reluctant to hold a substantial number of open space areas due to the difficulties in supervision and maintenance and increased exposure to public liability suits. Gifts of land to land trusts are a most economical means of assuring the permanent open spaces needed to preserve the natural beauty of a town, maintain property values, and minimize the cost and strain of rapid town expansion. Many donors prefer to give their land to a local land trust which operates outside the political and governmental realm. A land trust has more flexibility in dealing with and carrying out the wishes of donors, and the often time-consuming procedures involved in dealing with a governmental body are avoided.

Typical Local Land Conservation Trusts

A local land trust is a non-profit, tax-exempt organization managed by an elected group of local volunteers. It seeks outright gifts of land and

Second, the policies and practices mentioned in the article may suggest measures which will help existing land trusts to improve their performance.

Third, this article should serve as a source of general information for interested members of the public who want to know what a land trust is, how it operates, and what its objectives are. A well informed public is essential to wide acceptance and support of the role of land trusts.

Following the publication in 1970 of my manual on how to form and operate a local land trust and my article "Preserving Small Natural Areas" in *Catalyst for Environmental Quality* (reprinted in the July/August 1973 issue of the *Connecticut Environmental Bulletin*), I have been answering land trust questions on a regular basis. I have spoken to a great many groups interested in starting land trusts as well as groups hoping to get their land trusts "off the ground." I have also supplied a number of forms such as charters, by-laws, deeds, easements, and applications for tax exemptions. I wish to continue helping out on land trust matters, but in the future I shall be available for consultation on a modest fee basis.

conservation easements on land. It seeks funds for the purchase of land and easements and funds to defray modest operating expenses. It also seeks wide public support for its goals. It is a public service organization, and its lands are held and managed for the benefit of the entire community.

Incorporation

A local land conservation trust usually is a membership corporation incorporated under The Nonstock Corporation Act (the law permits the use of the word "Trust" in a corporate title). Its main purpose is to engage in and promote, for the benefit of the general public, the preservation and conservation of natural resources of the town, including open spaces, swamps, woodlands, and water resources, the plant and animal life therein, and unique scenic, natural, and historic sites; and also to engage in and promote the scientific study of local natural resources. While most local land trusts operate in a single town, several operate in groups of adjacent towns.

Other special provisions of the Articles of Association or charter of a land trust include the establishment of classes of membership, such as honorary, charter, regular, student, junior, and associate. Another provision fixes the number of directors. (In order to insure liaison between the public and private sectors, the chairman of the town conservation commission or its equivalent may be designated an ex-officio member of the Board of Directors.) Another charter provision prohibits any action which might be inconsistent with the land trust's tax-exempt status or the deductibility of contributions made to it. Since the property of a tax-exempt organization can never revert to private hands, the charter also provides that if for any reason the corporate existence of the land trust ceases, its properties automatically will revert to and vest in another tax-exempt conservation organization, such as the Nature Conservancy, subject to applicable restrictions and limitations on use. As an alternative, a governmental body could be designated as the recipient.

After the charter has been filed in the office of the Secretary of State and the by-laws have been adopted by the incorporators, the directors and officers are elected (preferably the directors for staggered terms of years and the officers for annual terms).

Tax Exemption and Deductibility of Contributions

The next step is for the land trust to apply to the Internal Revenue Service for a ruling (on IRS form 1023) that it is exempt from federal income taxes and that contributions to it are tax deductible. The ruling is issued under Section 501 (c) (3) of the Internal Revenue Code on the basis of the land trust's tax-exempt purposes. They may be charitable, educational and scientific. However, if a land trust is not classified as a "publicly-supported" organization under Section 170(b) of the Code, contributions would be deductible by a donor only up to 20 percent of the donor's adjusted gross income.

Accordingly, the land trust should also apply for an advance ruling by the Internal Revenue Service that it qualifies as a "publicly supported" organization under Section 170(b) of the Internal Revenue Code. Donors of land are then entitled to deduct the current market value of the land (as established by appraisal) up to 30 percent of the donor's adjusted gross income in the taxable year in which the gift is made, with a five year carry-forward period available to the donor if the gift exceeds the 30 percent. The donor has no long term capital gains tax liability on the appreciated value of the donated land. A gift of cash may be deducted by the donor up to 50 percent of his adjusted gross income with the five year carry-forward. The carry-forward provision is extremely important today in the face of spiraling real estate values. The 30 percent limitation may be raised to 40 percent by reducing the deduction by 40 percent of the appreciation in the value of the land.

A copy of the tax-exempt ruling is filed by the land trust with the local tax assessor, requesting confirmation that the real estate held by the land trust is exempt from local real estate taxes. The assessor has the power to determine whether the properties claimed to be exempt are actually being used for a tax-exempt purpose.

The Internal Revenue Service has available Publication 557 entitled "How to Apply For and Retain Exempt Status for Your Organization."

Building Site Appraisals for Maximum Deductions

The bulk of the economic value of open space land lies in its potential use as building sites, and the value of raw, unbuildable land is small in comparison. The value of one acre as part of a two acre building site in a two acre zone is far greater than the value of the third acre owned in the two acre zone. Accordingly, in order to provide donors with maximum income tax deductions, steps should always be taken to qualify a proposed gift of land as a building site or sites where feasible (this may require action by the Planning & Zoning Commission or by the Town Sanitarian for approval of the septic system capability). Building site appraisals are readily defensible if contested by the Internal Revenue Service. The appraisals are based on comparisons with the selling prices of comparable property.

Land trusts should verify that land given to them has been released from any mortgage liens or other indebtedness.

Public Support and Understanding

Aside from the desirability of qualifying for a "publicly-supported" status for tax purposes, a healthy land trust is founded on the understanding and active support of the entire community. It should use every available means of publicity to explain its goals.

Appeals

In smaller towns, a land trust may find it feasible to seek wide public support by directing its annual appeal for funds to all the residents (households) in the town. In

the larger town, the annual appeal is directed to the groups of residents most likely to be interested in the objectives of the land trust. Such campaigns also encourage broad public participation in the affairs of the land trust by urging members of the public to become voting members.

Annual Brochure

Highly recommended is the publication of an Annual Brochure on the land trust, containing a report on progress during the year and an appeal for funds. The annual brochure provides continuity and lends itself to an effective community educational program over a period of years, which is basic to community understanding of the achievements and goals of the land trust. From time to time, the membership list should be published in the brochure.

A land trust also keeps the public informed of its activities by frequent articles in the local newspaper. Among the most effective public relations pieces are pictures of recent acquisitions of open space lands or lands on which conservation easements have been placed. Land trusts usually publish an account of each annual meeting of members, containing financial reports and an up-date on directors, officers, and the number of voting members. The public may be invited to attend annual meetings, and questions regarding the affairs of the land trust should be encouraged. Generally speaking, a land trust which periodically makes a complete public disclosure of its financial condition and capabilities will receive the most public support.

Dues Schedule

A typical local land trust maintains a dues schedule designed to make membership available to a broad cross section of the interested residents of the town, such as modest dues of \$10 to \$15 for an annual voting membership. Community leaders should be included.

Directors

A land trust should have a representative Board of Directors, representing a broad cross section of the many views and interests in the town. Community leaders should be included.

Programs

To attract and keep public support, a local land trust may conduct special programs. One example is having local high school students make an inventory of unique plants or wildlife found on land trust properties. These studies could serve as a basis for laying out trails or nature walks. Also, the students could assess the changes in nature brought about, over time, by the increase in population in the area.

Permanent Open Space Map

The preparation and updating of a map of the permanent open spaces in the town can be used effectively to stimulate interest in preserving natural areas. Many towns appear to have an abundance of open



Virginia J. Olmsted photo

spaces, particularly those with a rural-residential atmosphere and large-lot zoning, which gives a false sense of security. Most of the open space lands are really not protected from development at all. The local farm or nursery may be sold to a developer. Water company lands may go on the market. Private schools, churches, and the like may sell excess land to raise badly needed funds. Land owned by the town is always subject to pressures to develop for such worthy projects as a health care facility, low cost housing, or recreational improvements. Also, there is pressure to downgrade large-lot zoning. If residents of a town can be made aware that a large part of the open spaces they see and enjoy are not permanent, a new wave of interest in the local land trust can be expected.

Sources of Acquired Land

Outright Gifts

The most common source of land acquired by a local land trust is an outright gift made by the owner.

It is usually accomplished by a quit-claim form of deed containing a restriction limiting the use of the donated land to open space. One form of deed restriction is "the land hereby conveyed shall be preserved in perpetuity in its wild and natural state as a wildlife sanctuary." The deed also provides that upon a breach of the restrictive covenant, the land automatically reverts to and vests in another tax-exempt conservation organization. This would occur also under the charter provision in the unlikely event that the corporate existence of the land trust is terminated. The donor is entitled to the 30 percent tax deduction with the five year carry-forward, and there is no capital gains tax.

Neighborhood Giving

A land trust may undertake a general fund raising drive to obtain funds for the purchase of a specific tract of land or to provide a cash reserve for the purchase of land in general. However, in many cases the neighborhood approach may be more effective. When a particularly desirable tract of open space land is coming on the market, a neighbor can be asked to solicit in the neighborhood the funds needed to purchase the property. In some cases, funds may be donated to the trust by the adjacent land owners who wish to keep the land offered for sale as open space. The donors of the cash are entitled to the 50 percent tax deduction with the five year carry-forward.

Another example of neighborhood giving is where a group of neighbors with contiguous land each owned land in excess of the zoned requirement but no one owned enough for two lots. The neighbors pooled their land in excess of zoned requirement to establish new building sites for appraisal purposes, which greatly increased the value of the excess land. The new building sites were donated to the land trust, and the donors shared the building site appraisals in the same proportions as their contributions of land.

Bargain Sale

When an owner of desirable open space land wishes to give it to the land trust but feels that he cannot afford to make the entire gift, a "bargain sale" should be encouraged. For example, the land has a market value of \$50,000. Three nearby property owners each contribute \$10,000 to the land trust which purchases the land for the \$30,000. (As an alternative, the \$30,000 might be available in the funds of the land trust.) The property owner selling the land worth \$50,000 for a price of \$30,000 is entitled to a deduction (contribution) of \$20,000 for income tax purposes, subject to adjustment for the capital gains tax on the sale portion.

Gifts of Undivided Interest

The donor of land may wish to have the gift made in more than one taxable year to suit his personal requirements. The donor can make a series of gifts of undivided fractional interests, such as a 25 percent undivided interest in each of four years (the 30 percent tax deduction and five year carry-forward with no capital gains tax apply to gifts of undivided fractional interests). As an alternative, if the gift consisted of a number of potential building sites, the donor could

donate the building sites over the desired period of years. The donor can protect the land trust by leaving the unconveyed portion of the gift to the land trust in his will. It is assumed that until the entire gift is completed, the donor would continue to pay the costs incident to ownership, such as taxes and insurance.

Gift Subject to Life Tenancy

This type of gift assumes that the personal residence of the donor is located on the land. Ordinarily a land trust avoids having any buildings on its land. Buildings occupied by rent-paying tenants can raise tax complications. Vacant buildings create serious insurance and maintenance problems as well as encouraging vandalism.

In the case of the life tenancy, these problems can be avoided if the land trust has the right, upon the termination of the life tenancy, to sell the residence with appropriate surrounding land or to demolish the building if it is in a run-down condition. During the life tenancy, the tenant would be responsible for all costs related to ownership of the property, including taxes, insurance, and maintenance.

The income tax deduction is computed by a formula involving the age and sex of the life tenant and the fair market value of the property reduced by straight-line depreciation on the house. The 30 percent tax deduction and five year carry-forward with no capital gains tax would be applicable.

Testamentary Gifts by Will

There will always be landowners who wish to preserve the natural beauty of their open space land but do not wish, or cannot afford, to make a substantial gift during their lifetimes. Local lawyers and bankers should be kept aware that the land trust can carry out the wishes of donors who leave land to the land trust in their wills. In some cases, the donor may wish to leave his entire land holdings to the land trust, including his residence. The will should contain a clear provision giving the land trust the right to sell the residence and use the proceeds to buy additional open space land.

However, the advantages of lifetime giving should always be pointed out to potential donors. The advantages of lifetime giving are: (1) the income tax deduction provides immediate cash savings for the donor; (2) the capital gains tax is eliminated; and (3) the value of the donated land is removed from the donor's estate. Also, he may still be able to see and enjoy the donated land.

Public Access to Land Trust Properties

Some land trust properties are open to the public with such reasonable posted requests as "Please Do Not Litter" and "Keep On the Trails." Most land trusts are proud to have the public see and appreciate the open

spaces they are preserving. However, in a number of towns, very few residents are interested in walking on land trust properties at this time, and it is not feasible to maintain trails. Land trusts are now going through an acquisition phase. The need for more public involvement in the use of land trust properties will come with further increases in population and fewer available open space areas.

There will be instances where unrestricted public access creates a problem. Open spaces may contain fragile natural resources, both plant and animal, to be protected, and public access, if any, must be highly restricted and supervised. Likewise, the open space land may be in close proximity to the home of a donor, and unrestricted public access would be unduly disturbing.

While public access is desirable, it is not critical to the tax exempt status of open space land held by a land trust. Not many years ago when open space land was in abundant supply, it was reasonable to feel that lands exempt from real estate taxes should be open to the public. But in the face of the rapidly diminishing supply, open space land *per se* has won wide acceptance as being necessary to protect environmental quality for the general welfare.

As an example, Connecticut's Public Act 490 was one of the first legislative acts to recognize that open space land could not survive if taxed as a potential development site rather than on its "use" value as open space. The Act established three use classifications — open space, forest, and agricultural — and provided for very substantial reductions in real estate taxes for lands held for these uses under the provisions of the act. The act was adopted in the interests of the general welfare, to protect natural resources, and public access was not a factor.

Criteria for Acceptable Land

As the struggle between the need to develop and the need to preserve natural lands intensifies with increases in population and a diminishing supply of open space land, land trusts can expect to come under more careful scrutiny, particularly with respect to the exemption from real estate taxes and the tax deductions provided for donors of land. Land trusts must operate in the public interest and promote welfare by preserving significant undeveloped land to be shared with future generations.

Since many land trusts operate in towns that are already extensively developed, they cannot expect to become involved with the protection of endangered species or other unusual plant or animal wildlife. They should endeavor to conserve the town's natural resources by seeking gifts of wetlands, swamps, marshes, thick woods, open fields, unique rock outcroppings, the banks of ponds, streams and rivers, and scenic and historic sites. They should attempt to acquire green belts, stream belts, and similar areas by linkages. They should give special attention to the

protection of aquifers essential to our water supply. The land most valuable to land trusts for conservation purposes includes land with the severest development limitations, land which should remain untouched.

Other considerations include whether the open space land can be seen and enjoyed by the public and the extent to which it can be used for educational and scientific purposes, including nature walks.

Since a land trust depends on gifts, it can consider only the land available to it. In a highly developed community, the available natural land may not have any particular ecological significance other than as open space essential to a healthy environment for mankind. By holding open space land in the interest of the general welfare, the land trust is carrying out its tax exempt charitable purpose.

Reservation of Open Spaces in the Town Planning and Zoning Process

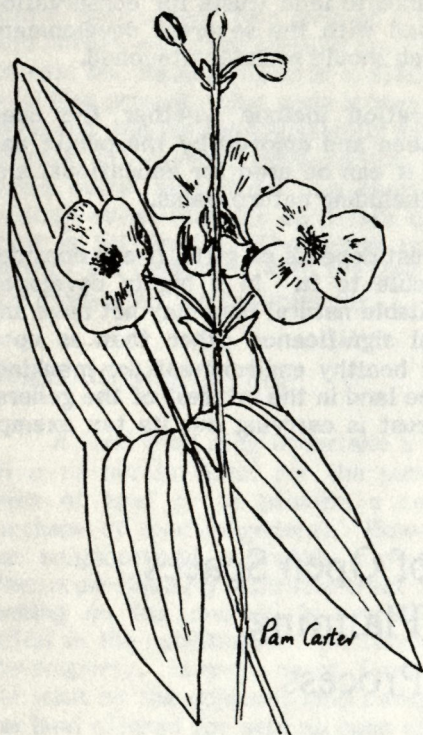
An increasingly important source of open space land for land trusts is the practices of many Planning and Zoning Commissions. Under State law, a developer can be required to donate from ten to fifteen percent of the total area of a subdivision as open space. Due to the difficulty of adequate supervision and exposure to public liability suits, a few towns have been reluctant to own a large number of widely scattered open space areas. This was particularly true when the law provided for the reservation of open spaces for parks and playgrounds, contemplating their active recreational use. The law has been amended to cover the reservation of open spaces in addition to parks and playgrounds, and the required donation of conservation-type land is now clearly authorized. The favorable experience of land trusts in owning and managing large numbers of small open space areas contradicts the early fears. Land trusts are becoming the logical recipients of the open space lands donated by developers in subdivisions. Unfortunately some lagging commissions do not enforce the donation requirement.

Large areas of open space land are being set aside in conservation zoning (open space subdivisions). An example is where, in a two acre zone, the houses are permitted on one acre lots, and the other acre is contributed to the conservation zone, with the result that some forty percent of the total area in the subdivision may be set aside as open space. If the land in the conservation zone is, for example, wetlands or a swamp containing fragile wildlife, a land trust would be best suited to own and manage the land for conservation purposes. If the land is suitable for extensive public use, with walking trails and other recreational activities, it could better be owned and managed by an association of lot owners in the subdivision. The public benefits from conservation zoning in that the land most suitable for building is developed, and the land with severe development limitations — wetlands, swamps, steep slopes — is set aside as permanent open space.

Continued next month

Trailside Botanizing

by G. Winston Carter



Broad-leaved Arrowhead
Sagittaria latifolia

Nature unfolds a fascinating variety of leaf shapes but none is more distinctive than the arrowhead, logically named because of its shape. This is a typical marsh plant often growing at the edge of fresh water ponds. The leaves of this species of arrowhead show considerable variability in some habitats. This variability in leaf shape applies to other arrowheads also which often makes it difficult to establish the species unless the seeds of the plant are present.

Arrowhead should not be confused with arrow arum which has a leaf of similar shape and may be found growing side by side in some instances. A sure way of telling the two species of plants apart is by their flower. The arrow arum has a

rather inconspicuous flower growing underneath its leaves similar to that of skunk cabbage and Jack-in-the-pulpit, which belong to the same family, while arrowhead, a member of the water plantain family, has rather frail looking white flowers which extend several inches above the leaves. The male and female flowers which blossom from July to October are usually in separate clusters on the same plant. Reproduction is carried out by insect pollination and also by the bulblike tubers on underground stems which give rise to new plants.

One common name for arrowhead is duck potato, referring to the edible tubers which serve as food for many water fowl and muskrats. In addition, American Indians have used this plant as their chief vegetable food, and the early American settlers learned from the Indians about the tasty tubers of the arrowhead which they used to supplement their diet.

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